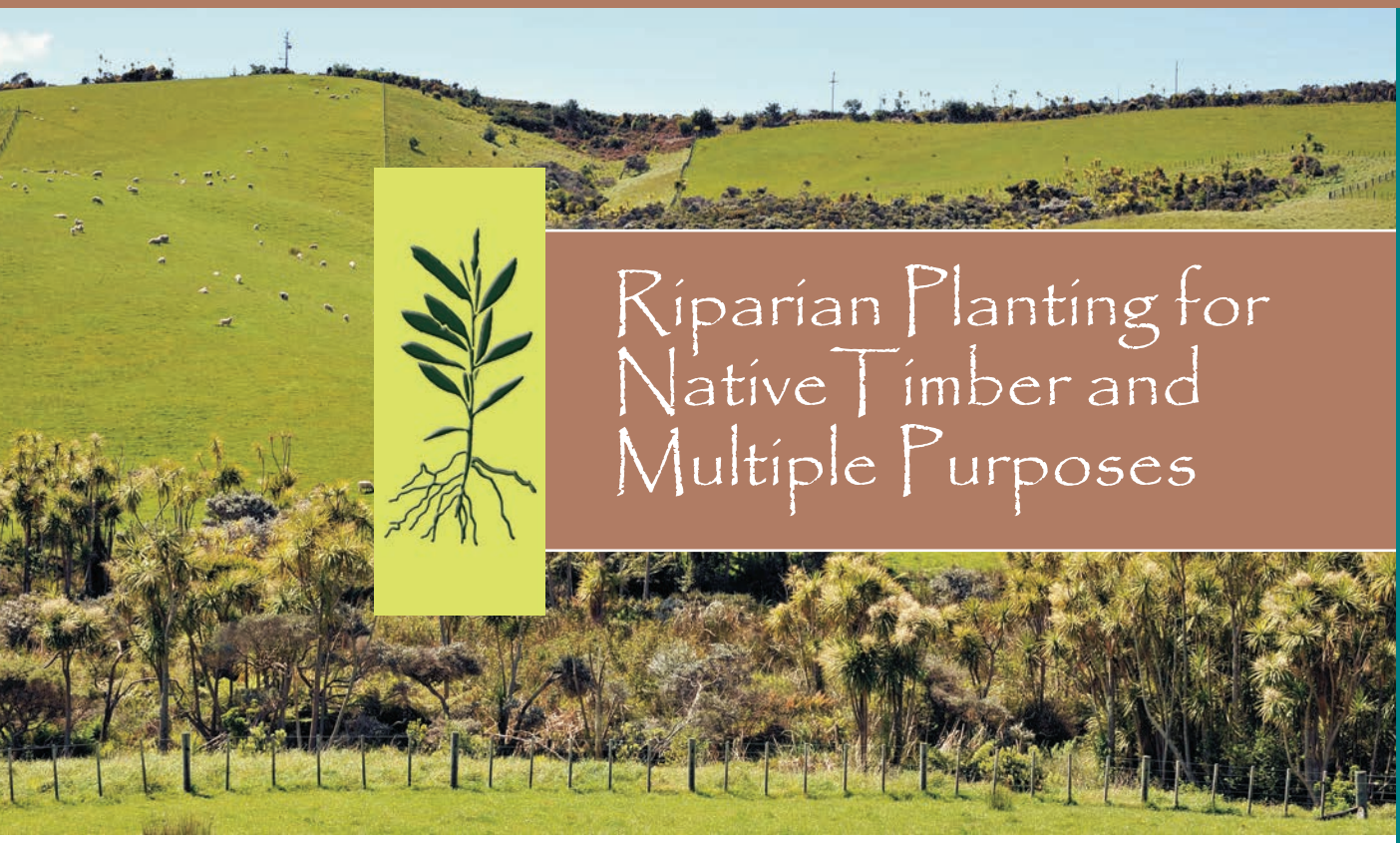

Riparian Planting for Native Timber and Multiple Purposes

NATIVE TREES FOR TIMBER

The growth, management and, ultimately, the sustainable harvest of native trees for timber can be compatible with riparian zone planting and retirement for conservation and water quality enhancement purposes. Sections of the riparian planting zone that are wide including terraces and slopes often provide sheltered, fertile sites for establishing native timber trees.

Steep regenerating and/or low productivity slopes above riparian areas, such as this one in Hawkes Bay, can be planted with native for environmental as well as for the long term option of sustainable timber production.

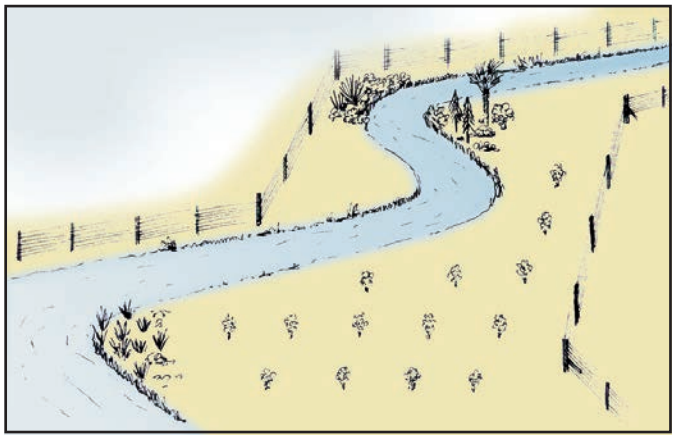

Figure 1: Fencing off stream deltas can create planting zones suitable for timber production.

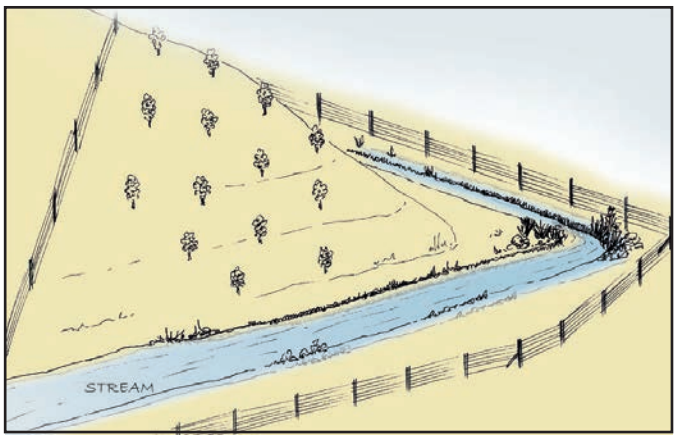

Figure 2: Fencing steep faces into riparian zones can create good sites for timber production.

Tree species

Native timber producing species such as totara *(Podocarpus totara)*, rimu *(Dracydium cupressinum)*, tanekaha *(Phyllocladus trichomanoides)*, kauri *(Agathis australis)*, rewarewa *(Knightia excelsa)* and matai *(Prumnopitys taxifolia)* all thrived naturally along riparian margins in pre-human times. Provided there is plenty of lateral shelter to induce good form and faster growth rates there is no reason why these native timber species cannot be included in mixed native tree and shrub plantings for riparian areas. Kohekohe *(Dysoxylum spectabile)* and puriri *(Vitex lucens)* can also be planted in riparian mixes in frost-free parts of the country.

Selective harvesting of individual trees following the principles of Continuous Cover Forestry (Barton 2008) should be possible with minimal damage to the stream and to the riparian margins. Trees can be felled away from the stream and hauled out of the riparian zone onto the adjacent pastureland.

Single-species native timber plantations, without mixed native trees and shrubs to support them, are probably less practical along narrow riparian margins, and will contribute less to aquatic and terrestrial biodiversity values. However, where stream deltas, terraces or steep faces occur and are fenced into the retired riparian zone providing some depth or width to the zone available for planting then single species plantations would be appropriate (Figures 1 and 2).

Shrub species

Details on establishment and management of native trees for timber is given in Bergin and Gea (2007). This includes using many of the native shrubby hardwood species such as manuka (*Leptospermum scoparium*) and karamu (*Coprosma robusta*) as a nurse for later interplanting of the timber trees. These nurse or pioneer shrubs are widely planted along riparian areas (e.g., Ministry for the Environment 2000).

Wider riparian margins can be successfully established in stands of native trees, such as totara, and managed for timber production.

DESIGNING RIPARIAN PLANTINGS TO PERFORM MULTIPLE FUNCTIONS

There is no one native planting prescription for riparian areas that will fulfil all management and biodiversity functions in all situations. As has been discussed in previous sections, streamside fencing and planting is unlikely to greatly reduce the amount of nitrogen reaching the stream - planting and management needs to be directed at wetlands and springs to reduce nitrogen, and on narrow riparian strips the need to establish a filter strip to extract sediment may conflict with a desire to establish effective aquatic shade. For this reason it is recommended that the desired functions of the riparian area are listed and prioritised before planting, and the species selection and planting plan are developed to perform the high priority functions.

THE ULTIMATE RIPARIAN ZONE

At most locations, the wider the margin that is available for retirement and planting the more likely the riparian zone can be designed and established to successfully perform multiple functions. The width of the "ultimate" riparian zone will vary from site to site depending on the shape and size of the stream and surrounding topography but the design is likely to look something like that illustrated below.

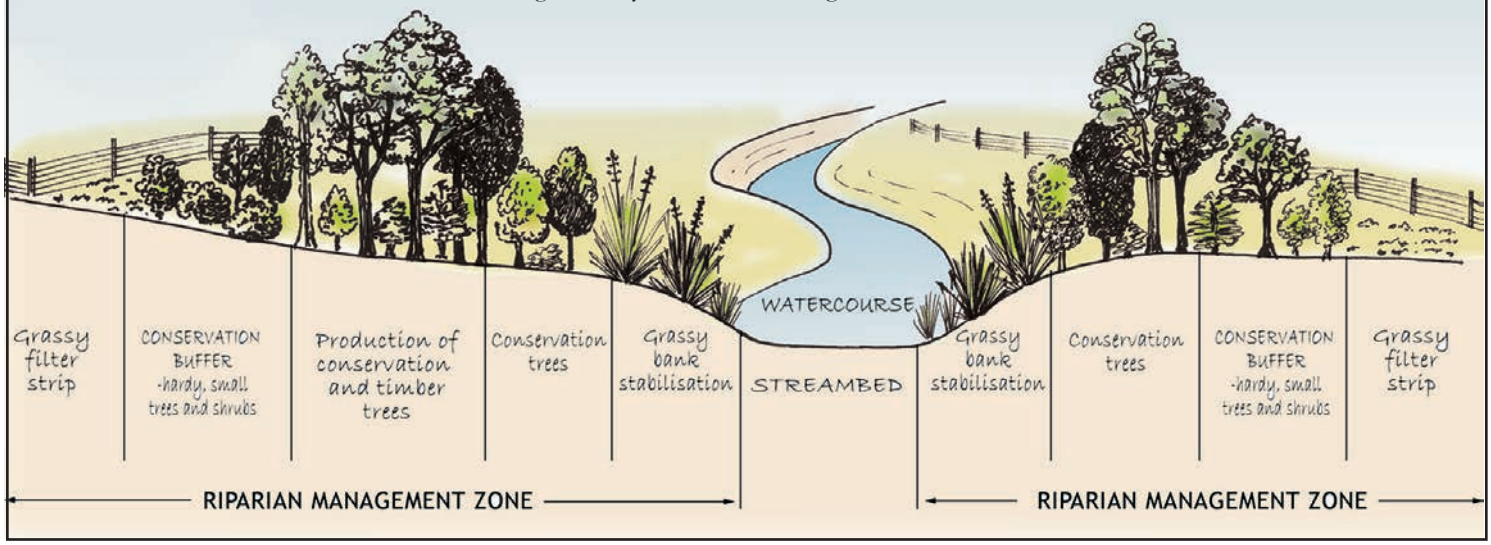

Figure 3: Cross-section of a multi-functional planted riparian zone (adapted and modified from Collier et al. 1995).

The lack of available land and resources means that establishing the "ultimate" riparian zone is not going to be possible in all situations. However, even on narrow riparian margins reasonably effective multi-functional riparian plantings can be established by positioning different species mixes where they can be most effective. This includes:

- Concentrate sediment/phosphorus grass filter zones where runoff is most effectively intercepted. This allows the area in between to be planted for aquatic and terrestrial biodiversity;
- Keep shade trees away from sections of stream bank where bank erosion is most likely to occur (eg. on the outside of bends); and
- Where springs emerge close to streams, include the spring in the retired riparian zone and manage the seepage zone as a grass and sedge-dominant wetland to the stream (Figure 4).

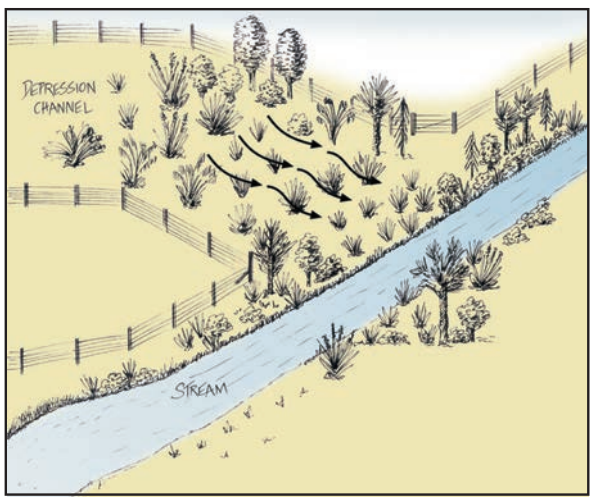

Figure 4: Filter strips dominated by grasses and sedges around springs and depressions will be most effective on these gentle gradients in intercepting surface run-off.

Wide terraces, deltas or slopes are often included in retired riparian areas where meandering streams are fenced to exclude grazing stock. These can amount to substantial areas where a wide range of native conifer and hardwood trees can be established with the option of managing as a future long-term specialty timber supply.

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Tãne's Tree Trust
Native Trees for the Future

Tãne's Tree Trust promotes the successful planting and sustainable management of New Zealand native trees and shrubs for multiple uses.

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ISSN 2230-3014 April 2011. Revised May 2012.

Printed by Scion Digital Print Centre, Rotorua